

Interim Progress Report on Duncan Oil North Hogback Remediation at North Hogback 12-#4

INTRODUCTION

Envirotech, Inc. has started to excavate around the P&A marker at the Duncan Oil North Hogback 12-#4 well. The well is located in Section 12, Township 29N, Range 17W of San Juan County, New Mexico. Contaminated soil was removed with the use of an excavator to a depth of approximately nine (9) feet. Upon excavation of the contaminated soil groundwater was encountered at approximately six (6) feet below ground surface. A water sample was taken and analyzed for BTEX by USEPA method 8021B; see *Appendix 1, Laboratory Results*. These results exceed the New Mexico WQCC standards for groundwater.

ACTIVITIES PERFORMED

On November 1, 2005, Envirotech, Inc. began excavation on the North Hogback 12-#4 Oil Well. Oil staining was observed around the P&A marker; see *Appendix 3, Site Photographs*. Soil was excavated from around the P&A marker and loaded directly into a 10 yd³ dump truck which hauled the contaminated soil up the hill to a stock pile at the North Hogback 12-#1 well. The stock piled soil was then transferred into a 20 yd³ belly dump trailers and hauled to Envirotech's NMED permitted landfarm.

Prior to excavation several test holes were dug to determine the horizontal extent of the contamination. Test hole 1 showed no visible contamination, in test holes 2-4 approximately 6-8 inches of contamination was observed at the water table. A strong odor was observed in test hole #5, so a sample was taken and analyzed for Total Petroleum Hydrocarbons (TPH). Also throughout excavation several samples were taken and analyzed in the field for TPH by USEPA Method 418.1; see *Appendix 2, Field Analysis*. The results from these samples are slightly above the NMOCD standards for this site. During excavation an odor resembling Hydrogen Sulfide (H₂S) was observed. Work was stopped until personal H₂S monitors were obtained. When work resumed the area was also monitored for H₂S with the use of an Eagle four (4) gas analyzer made by RKI instruments. Ambient concentrations on methane, carbon dioxide and hydrogen sulfide in the area immediately surrounding the P&A marker were zero (0%) and oxygen read 20.9%. A sample was then taken from the contaminated soil, placed in a Ziploc bag, and analyzed using the Eagle. No H₂S was detected; however the instrument did detect a 1% Methane concentration in the sample. The oxygen and carbon dioxide concentrations did not deviate from the ambient concentrations of 20.9% and 0% respectively.

During excavation around the P&A marker a small, steady streams of gas bubbles were observed from where the soil beneath the water table was disturbed. At this time we cannot determine where the gas is coming from, but our opinion is that it is most likely

coming from a casing leak below the water table. This leak is most likely the source of the petroleum liquids that have contaminated soil around the well.

Presently, an area approximately 30 feet north of the P&A marker has been excavated. It is estimated that a similar area south of the P&A marker will need to be excavated, see *Figure 1, Site Map*.


SUMMARY AND CONCLUSIONS


Envirotech is in the process of excavating the contaminated soil around the P&A marker at the north hogback 12-#4 well located in San Juan County, New Mexico. The clean-up will be completed to the standards determined by the NMOCD. Envirotech recommends that the well should be evaluated to determine if it requires re-plugging, otherwise the contamination at the site may continue.

We appreciate the opportunity to be of service, if you have any questions or require any additional information, please contact our office at 505-632-0615.

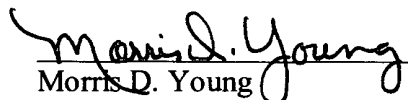
Respectfully submitted,
ENVIROTECH, INC.

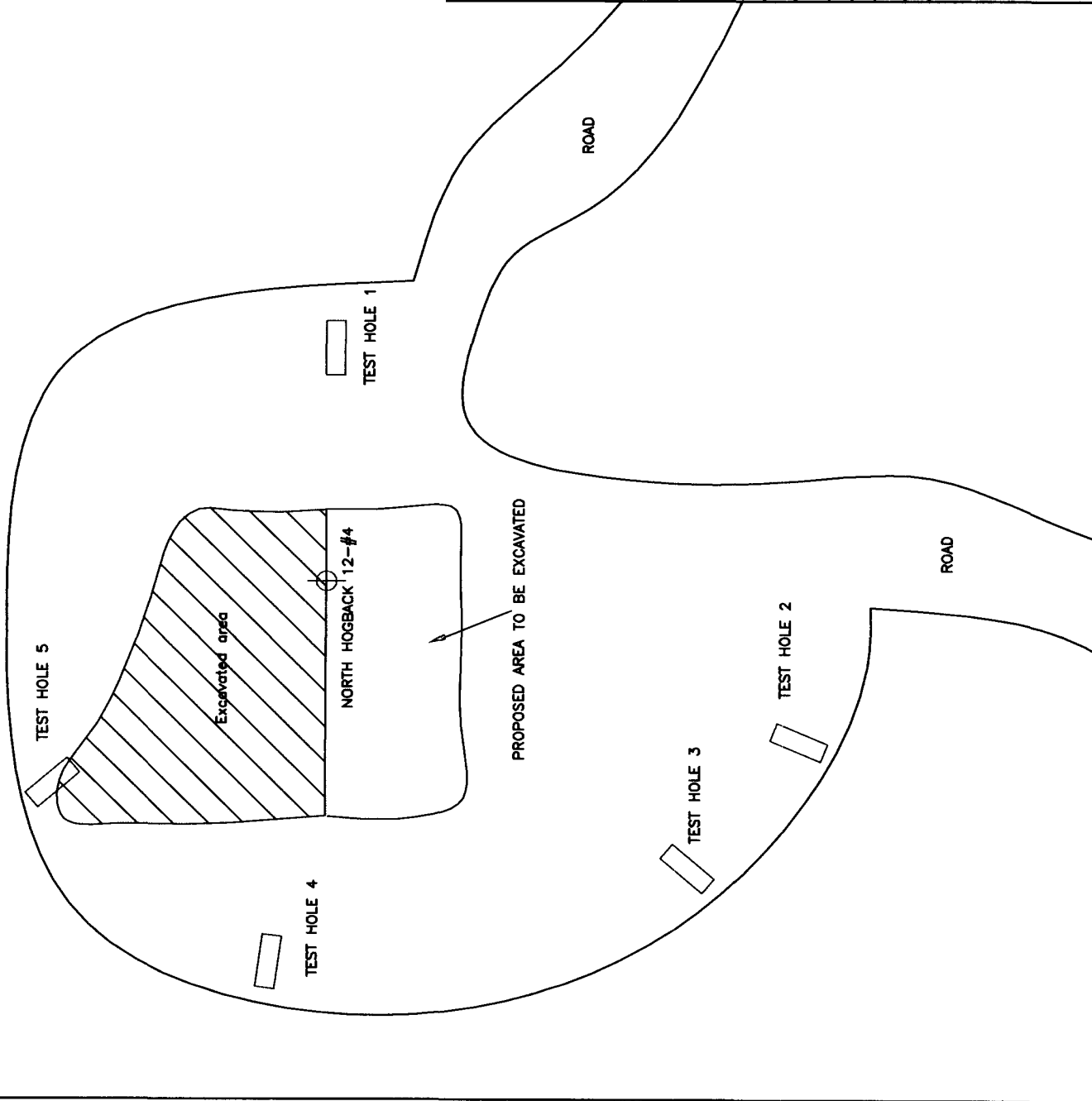
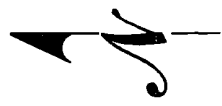
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LEGEND

- WELL HEAD
- PROPOSED AREA
- TEST HOLE
- EXCAVATED AREA

DUNCAN OIL
NORTH HOGBACK 12 WELL NO. 4
SEC. 12, T-29-N, R-17-W
SAN JUAN COUNTY, NM

SCALE: 1/32"=1'-0"	FIGURE NO. 1	REV
PROJECT NO. 05161-001		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN	GWC	11/4/05	BASE DRWN	MPM	12/1/04
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ENVIRONMENTAL SCIENTISTS & ENGINEERS
ENVIROTECH

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Duncan Oil	Project #:	05161-001
Sample ID:	N. Hogback 12-#4	Date Reported:	11-03-05
Chain of Custody:	15014	Date Sampled:	11-02-05
Laboratory Number:	34877	Date Received:	11-02-05
Sample Matrix:	Water	Date Analyzed:	11-03-05
Preservative:	Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	83.5	1	0.2
Toluene	327	1	0.2
Ethylbenzene	1,270	1	0.2
p,m-Xylene	1,250	1	0.2
o-Xylene	575	1	0.1

Total BTEX 3,510

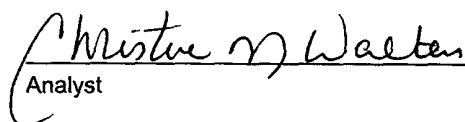
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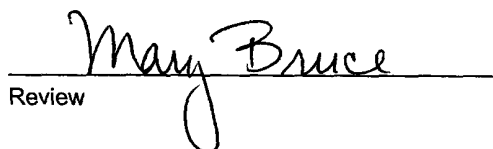
Surrogate Recoveries:	Parameter	Percent Recovery
	fluorobenzene	99 %
	1,4-difluorobenzene	99 %
	4-bromochlorobenzene	99 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: Groundwater Hogback.


Analyst


Review

EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Duncan Oil	Project #:	05161-001
Sample No.:	1	Date Reported:	11/4/2005
Sample ID:	Test Hole #5, bottom composite	Date Sampled:	11/2/2005
Sample Matrix:	Soil	Date Analyzed:	11/2/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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Total Petroleum Hydrocarbons	216.0	5.0
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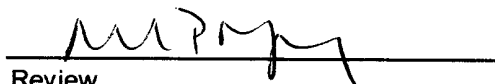
ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: North Hogback 12-#4

Instrument calibrated to 200 ppm standard. Zeroed before each sample


Analyst


Review

**EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS**

Client:	Duncan Oil	Project #:	05161-001
Sample No.:	2	Date Reported:	11/4/2005
Sample ID:	Composit Sample of North Wall	Date Sampled:	11/2/2005
Sample Matrix:	Soil	Date Analyzed:	11/2/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

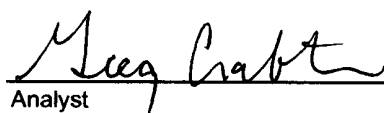
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	2,648.0	5.0

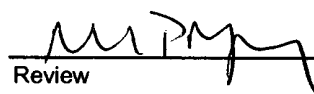
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References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **North Hogback 12-#4**

Instrument calibrated to 200 ppm standard. Zeroed before each sample


Analyst


Review

**EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS**

Client:	Duncan Oil	Project #:	05161-001
Sample No.:	3	Date Reported:	11/4/2005
Sample ID:	Composit Sample of North/East Wall	Date Sampled:	11/3/2005
Sample Matrix:	Soil	Date Analyzed:	11/3/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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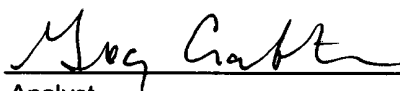
Total Petroleum Hydrocarbons	292.0	5.0
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ND = Parameter not detected at the stated detection limit.

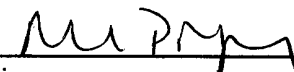
References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **North Hogback 12-#4**

Instrument callibrated to 200 ppm standard. Zeroed before each sample



Analyst



Review

**EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS**

Client:	Duncan Oil	Project #:	05161-001
Sample No.:	4	Date Reported:	11/4/2005
Sample ID:	Composit Sample of bottom	Date Sampled:	11/3/2005
Sample Matrix:	Soil	Date Analyzed:	11/3/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
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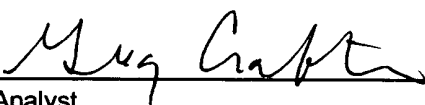
Total Petroleum Hydrocarbons	280.0	5.0
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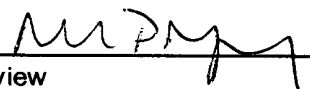
References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **North Hogback 12-#4, bottom sample 3' below water table**

Instrument callibrated to 200 ppm standard. Zeroed before each sample



Analyst



Review